

## **Senior Fellowship for Dr. Hervé Bertin Bissoleua Daghela: Biological control of soil-dwelling pests in traditional cacao agroforests of Cameroon using encapsulated CO2 associated with endophytic fungi**

Initiative: Wissen für morgen – Kooperative Forschungsvorhaben im subsaharischen Afrika (beendet)

Ausschreibung: Postdoctoral Fellowships "Resources, their Dynamics and Sustainability - Capacity-Development in Comparative and Integrated Approaches"

Bewilligung: 23.07.2014

Laufzeit: 3 Jahre

We aim to explore the potential efficacy of a new control strategy, by using of endophytic and entomopathogenic fungi, isolated from cacao leaves, in combination with CO<sub>2</sub> emitting capsules for termite control. We will determine whether subterranean termites are attracted to CO<sub>2</sub> sources by behavioral observations in the laboratory and in the field. We will test the effect of a variety of CO<sub>2</sub>-generating sources on termites in the laboratory and in the field. We will explore the potential antagonistic activity of several strains of endophytic and/or entomopathogenic fungi against subterranean termites, aiming at elucidating their possible mechanism of antagonism in a two-step process using a non-destructive behavioral observation device: in step 1 we will quantify the distribution of subterranean termites to evaluate the attractiveness of CO<sub>2</sub> emitting capsules. In step 2 we will assess the attract and kill strategy by combining CO<sub>2</sub>-emitting capsules with isolated strains of endophytic and/or entomopathogenic fungi to evaluate the potential of this approach to enhance the control efficacy of subterranean termites over conventional chemical treatments. We hypothesize that endophytic and entomopathogenic fungi may be good biological control candidates against termites when associated with CO<sub>2</sub>. We definitely expect that in case the system works for termites and cacao, it will work in other herbivorous pest species crops and other termite species as well. The project focuses on ecosystem services provided by endophytic fungi. This research supports an initiative aimed at establishing a certification scheme for cacao friendly production in rainforest buffer zones.

### **Projektbeteiligte**

#### **Prof. Dr. Hartmut Stützel**

Universität Hannover

Naturwissenschaftliche Fakultät

Institut für Gartenbauliche Produktionssysteme

Abteilung Systemmodellierung Gemüsebau

Hannover

**Dr. Herve Bertin Bisseeleua Daghela**

National Agricultural Institute

for Development (IRAD)

Cacao and Coffee Programme

Yaoundé

Kamerun (Cameroun)

#### **Open Access-Publikationen**

**Agroforestry Management Systems Drive the Composition, Diversity, and Function of Fungal and Bacterial Endophyte Communities in Theobroma Cacao Leaves**